OPEN DATA, EPIDEMIOLOGY AND HOMICIDES IN BALTIMORE, 2005 TO 2017

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VIOLENCE SHARES CHARACTERISTICS WITH INFECTIOUS DISEASES

Clustering, Spread, and Transmission (IOM, 2013)
91% MEN

N = 3,366
85% AFRICAN AMERICAN MEN

N = 3,366
African American Women = 7%
White Men = 4%
Hispanic Men = 2%
White Women = 2%
Hispanic Women = <1%
INCIDENCE RATE PER 100,000 RESIDENTS (AGE ADJUSTED)

~75 per year per 100,000 residents

x 11 =

~6.8 per year per 100,000 residents
INCIDENCE RATE PER 100,000 RESIDENTS (AGE ADJUSTED)

~about 7.8 per year per 100,000 residents

~about 15 per year per 100,000 residents

~about 62 per year per 100,000 residents
Homicide Rate per 100,000 Residents

- African American Males
- White Males
- Hispanic Males
- African American Females
- White Females
- Hispanic Females
- Baltimore City
CAUSE OF DEATH (N = 3,366)

Firearm

Total Firearm Homicides: 2,779 (83%)

Stabbing

Total Homicides from Stabbing: 311 (9.2%)

Other Causes

Total Homicides from Other: 276 (8.2%)
CAUSE OF DEATH (N = 3,366)

- 2005–2017: 157 (51%) of female homicide victims were killed by firearm
  - 58 (19%) by stabbing
  - 92 (30%) by other

- 2005–2017: 2,622 (86%) of male homicide victims were killed by firearm
  - 253 (8%) by stabbing
  - 184 (6%) by other
CAUSE OF DEATH (N = 3,366)

- **White**
  - 2005–2017: 98 (52%) of white homicide victims were killed by firearm
  - 36 (19%) by stabbing
  - 5 (29%) by other

- **Hispanic**
  - 2005–2017: 34 (60%) of Hispanic homicide victims were killed by firearm
  - 11 (19%) by stabbing
  - 12 (21%) by other

- **African American**
  - 2005–2017: 2,637 (85%) of African American homicide victims were killed by firearm
  - 259 (8%) by stabbing
  - 204 (7%) by other
INDIVIDUAL CHARACTERISTICS: FEMALE VICTIMS

- Older than male victims*
  - Female Average: 33
  - Male Average: 30
- More likely to be Intimate Partner Violence
  - 68% of IPV victims were female
  - 7% of non-IPV victims were female
- More likely to be killed at home
  - 33% of victims killed at home were female
  - 6% of victims not killed at home were female
- Less likely to be killed by firearm
  - 25% of victims killed by non-firearms were female
  - 5% of victims killed by firearm were female

*Statistically significant difference, p<0.05, t-test
INDIVIDUAL CHARACTERISTICS AND ODDS OF BEING A FIREARM HOMICIDE VICTIM

- Gender, Male: 4.65 (3.52 - 6.14)
- Race, African American: 4.65 (3.52 - 6.14)
- Age, Adult: 2.38 (1.70 - 3.35)
- Education, ≥ High School: 0.79 (0.61 - 1.04)
- Marital Status, Married: 0.89 (0.64 - 1.23)
- Presence of Alcohol, Present: 0.38 (0.26 - 0.56)
- Employment, Employed: 0.71 (0.55 - 0.92)
- Injured at Home, Yes: 0.26 (0.20 - 0.34)
- Intimate Partner Violence, Yes: 0.24 (0.14 - 0.40)
- Homeless, Yes: 0.14 (0.06 - 0.36)
- Gang-Involved, Yes: 1.51 (0.51 - 4.48)

Adjusting for gender, race, and age ≥ 18

Bold is statistically significant, <0.05
<table>
<thead>
<tr>
<th>Community Statistical Area Indicator</th>
<th>Univariate Model Incidence Rate Ratio (95% CI)&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of Households Living Under the Poverty Line (10% Increments)</td>
<td>1.73 (1.47 - 2.04)</td>
</tr>
<tr>
<td>Index of Physical Disorder</td>
<td>1.64 (1.49 - 1.80)</td>
</tr>
<tr>
<td>Average Number of Homicides in Neighboring CSAs (10 Homicide Increments)</td>
<td>1.19 (1.11 - 1.27)</td>
</tr>
<tr>
<td>Percentage of Residential Properties That Are Vacant and Abandoned (10% Increments)</td>
<td>1.77 (1.50 - 2.10)</td>
</tr>
<tr>
<td>High School Completion Rate (10% Increments)</td>
<td>0.39 (0.24 - 0.63)</td>
</tr>
<tr>
<td>Population Density (1,000 people per square mile increments)</td>
<td>1.05 (1.01 - 1.09)</td>
</tr>
<tr>
<td>Racial Diversity Index</td>
<td>0.89 (0.82 - 0.96)</td>
</tr>
</tbody>
</table>

Results from negative binomial regression on homicide counts (rates) per Community Statistical Area (CSA) by CSA indicators.<sup>a</sup> Each row represents a univariate model. <sup>b</sup> Results represent a multivariable model. <sup>c</sup> Results from single, multivariable model with **Percentage of Households Living Under the Poverty Line, Physical Disorder, and Average Number of Homicides in Neighboring CSAs** as independent variables. (**Bold** indicates statistical significance at p ≤ 0.05 level.)
WHAT DOES THE FINAL MODEL MEAN?

10% Households Under Poverty Level

21% Higher Homicide Rate

20% Households Under Poverty Level
WHAT DOES THE FINAL MODEL MEAN?

1  Physical Disorder Index

47% Higher Homicide Rate

2  Physical Disorder Index
Baltimore Community Statistical Areas in Order of Decreasing Proportion of Households Below the Poverty Line

18 Poorest Neighborhoods had 50% of the homicides
18 Wealthiest Neighborhoods had 10% of the homicides

Cumulative Percent of Homicides

- Line of Equality

2005-2017

EMERGING HOT SPOT ANALYSIS, 2005 TO 2017

Two large persistent hot spots over east and west Baltimore, surrounded by sporadic hot spots. In the west, there is an area of intensifying hot spots. Greater Govans shows many new hot spots.

There are some cold spots as well. There is a large area of new cold spots in Dickeyville/Franklintown and another in Loch Raven and Hartford/Echodale. There are persistent cold spots in the more affluent CSAs in the north and in the less populated industrial areas.
EMERGING HOT SPOT ANALYSIS, BLACK MALES, 15-34, KILLED BY FIREARM, 2005 TO 2017

The persistent hot spots are now less so, replaced by sporadic and new hot spots. In the west, there are intensifying hot spots within the larger western hot spot. In the east, there are diminishing hot spots within the larger eastern hot spot.

There is also an area of new and consecutive hot spots in Greater Govans. There are also new and consecutive hot spots in Howard Park/West Arlington and Forest Park/Walbrook. And the area to the northwest is mostly sporadic.
A Closer Look at Homicides in Baltimore Occurring Since 2005

Follow the instructions below to create a map of homicide locations in Baltimore. The map will update dynamically as you make your choices. You can then click on GRAPHS to see some graphs based on the data you choose, or click on TABLE to look at a spreadsheet table of data.

Please note:
1. Data collected from official announcements by official sources (eg. Baltimore Police Department). 2. Addresses are at the block level and may have been edited during the processing stages. For example, Johns Hopkins may have been used to center points from overlapping. 3. This map is not intended to identify individual victims or circumstances. 4. Some cases may have been later classified differently from what was originally stated in the official announcement. 5. If using this app, you agree to see these data mesmo is his.

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Begin by choosing which you want the colors of the markers to represent (also determines the legend colors):

Choose Marker Categories:
- 
- 

Next, choose the date (or date range) you want to explore.

01-01-2009 09-12-2019

View all events, or only those within a Community Statistical Area (CSA). A CSA is an aggregation of neighborhoods with similar characteristics.

Select All:

Add a layer with additional information:

Select Layer:

Next, pick the individual characteristics of the victim: Age, Race, Gender.

Age/Race/Gender

- 10 20 30 40 50 60 70 80 90 100

- African American
- White
- Hispanic
- Asian
- Other

Other

- Female
- Male

Pick the cause of death: Shooting, Stabbing, or Other.

Cause of Death

- Shooting
- Stabbing
- Other

Reset Selections

Data Sources:

CSA boundaries: https://data.baltimorecity.gov/dataset/7f5h-8yts

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https://rfnajera.shinyapps.io/homicide_app/